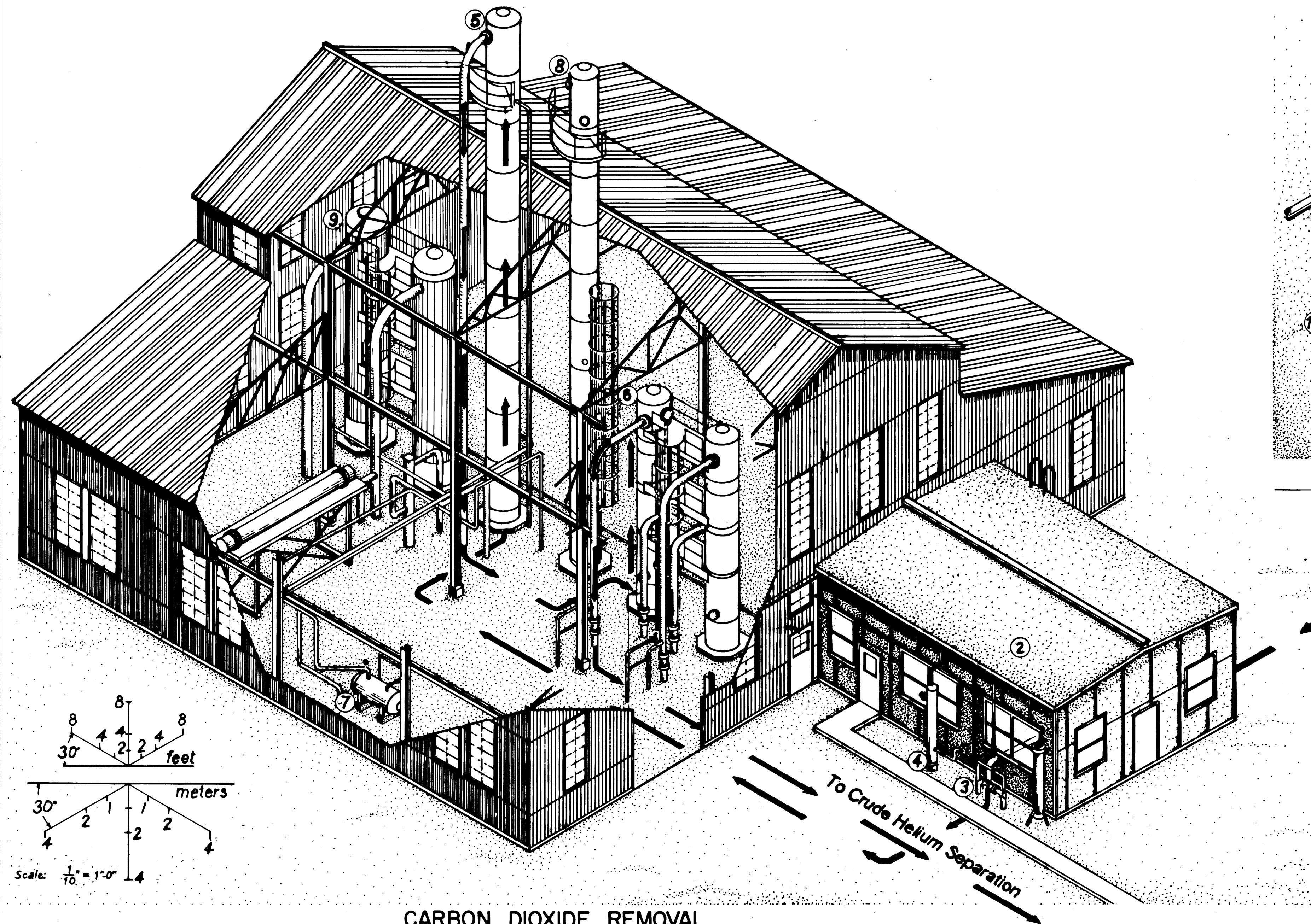


NATURAL GAS TREATMENT PROCESS

Exell Helium Plant



① Scrubber- Safe guard used to remove any hydrocarbons (heavy oils) from gas fields line.

② Meter House- Incoming natural gas is monitored for helium and other gas levels.

③ Gas Mixture Area- Conservation pipeline, Cliffside pipeline, and plant residue gases mix.

④ Coalescent Filter- Filters "Heavies" oil residue from natural gas mixture.

⑤ Contactor- Natural gas comes in contact with Amine Glycol to remove carbon dioxide.

⑥ Driers- Removes water (H_2O) from natural gas to prevent freezing later in the process.

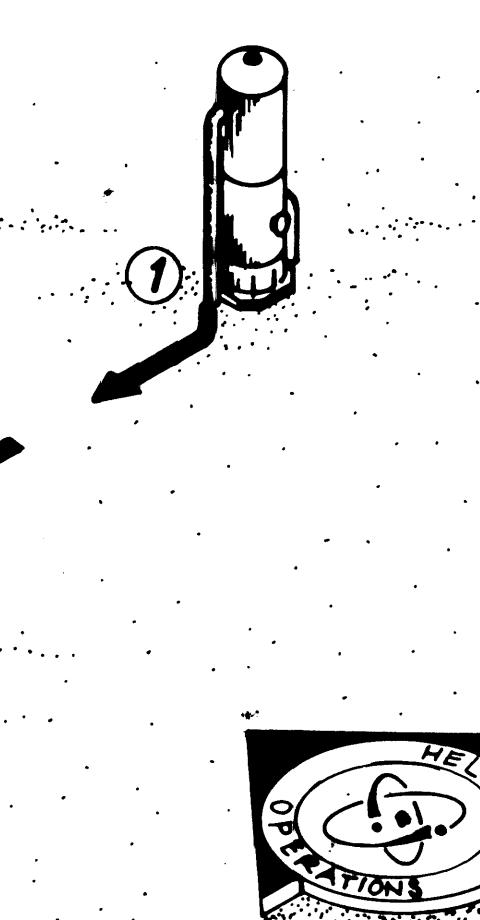
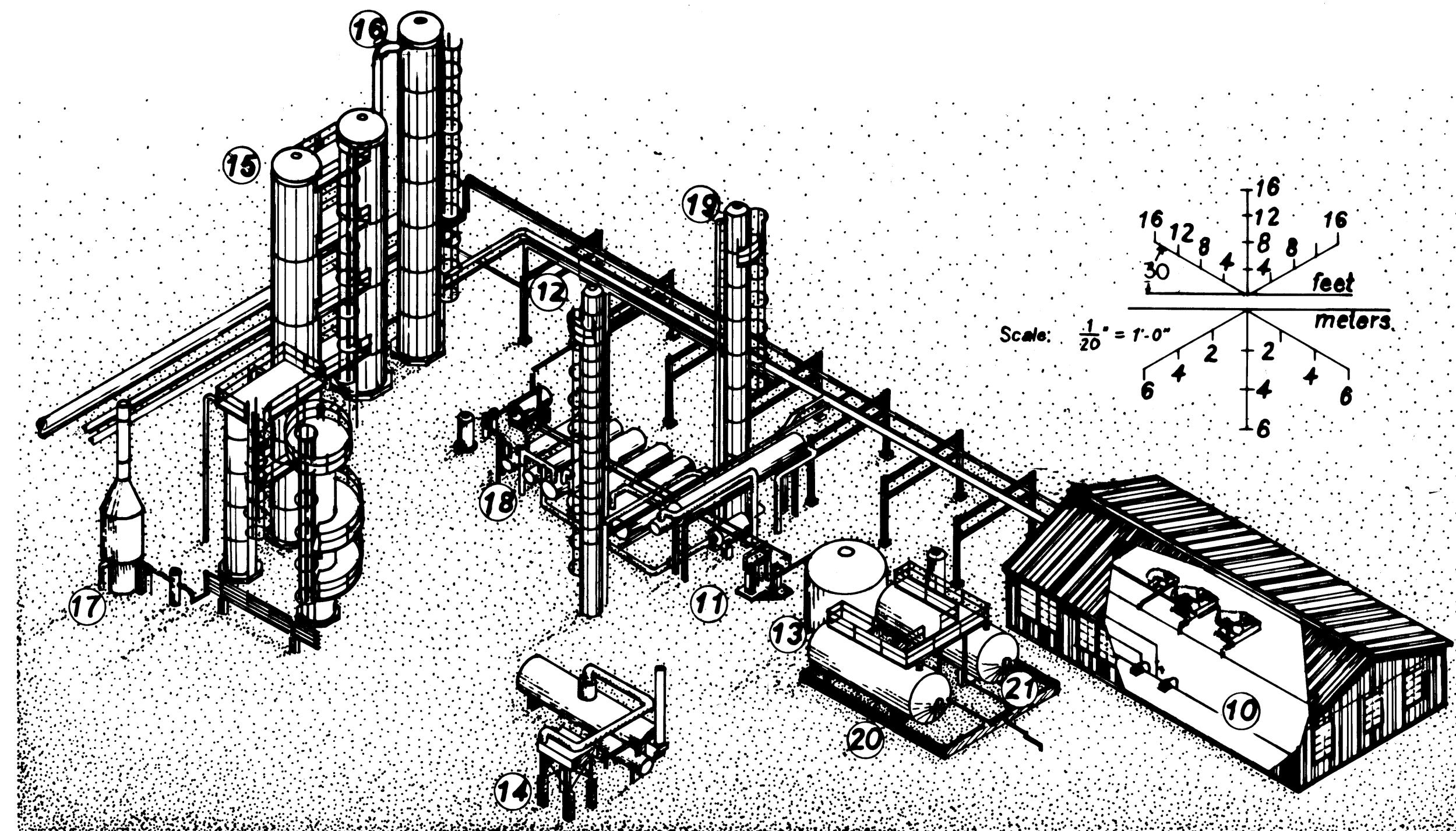
⑦ Vent Tank- Regulates natural gas flow and pressure.

⑧ Retired Contactor
⑨ Retired Driers

The initial phase of helium production was gas treatment and carbon dioxide (CO_2) removal. Untreated natural gas entered the Exell plant from three sources: the Panhandle gas field (.9% He), the conservation pipeline (60-70% He); and the plant's residue gas (0-1% He). The incoming mixture of raw gases contained approximately 20% helium.

The raw gas first entered a scrubber where liquid hydrocarbon contaminants from the natural gas field were removed. The gas was then compressed to 525 psi and sent to the CO_2 removal plant.

Carbon dioxide made up less than 1% of the incoming raw natural gas, however the carbon dioxide had the tendency to clog heat exchangers within the cryogenic units, necessitating its removal early in the process. The CO_2 was removed with a caustic solution called amine glycol.

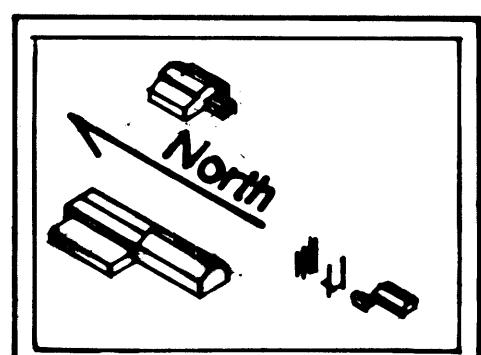


⑩ Pump House- Pumps Amine Glycol solution to Contactors in Carbon Dioxide removal area.

⑪ Heat Exchangers- Solution "rich" with CO_2 leaving the contactor takes heat from "lean" hot solution coming from the Solution Still.

⑫ Solution Still- Removes the carbon dioxide from the Amine Glycol solution using heat so it can be recycled.

⑬ Amine Glycol Tank- Used to store new solution put into system to compensate for loss.



⑭ Solution Reclaimer- Used to remove solids and impurities from Amine-Glycol Mixture.

⑮ Retired Driers

⑯ Retired Contactor

⑰ Retired Nitrogen Driers

⑱ Retired Heat Exchangers

⑲ Retired Solution Still

⑳ Amine Holding Tank

㉑ Glycol Holding Tank

TRIM LINE
HISTORIC AMERICAN ENGINEERING RECORD
HOKE NUMBER
TX-105 B

1943

HIGHWAY 287 N
MOORE COUNTY

MASTERSON

HELIUM RECORDING PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR
DRAWN BY: TOM CHENEY & JON GANELL
2001